F-18 Stereo Vision Data collection

Completed Technology Project (2017 - 2018)

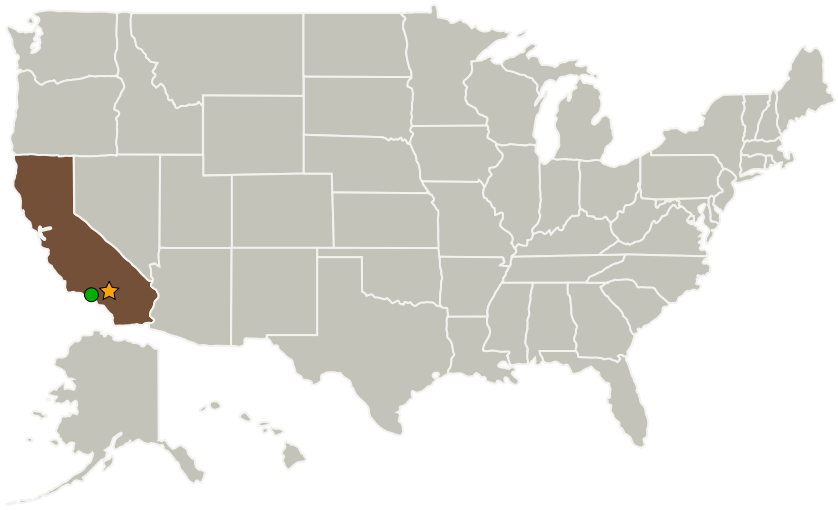
Project Introduction

Integration onto an F-18 of JPL's collaborative stereo technology for robust passive (vision based) terrain relative navigation based on two non-static cameras. Primary Technical Hurdles:#• Accurate time synchronization of distributed stereo system#• Real-time camera to camera pose estimation and on-board map construction#• Vibration and motion blur analysis for low altitude flight with wing-tip systems

Anticipated Benefits

Airborne visual measurements could be used to enhance aircraft or spacecraft vehicle visual awareness, as well as a valuable tool during flight research.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
●Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

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Center Innovation Fund: AFRC CIF

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Primary U.S. Work Locations
California

Project Transitions

October 2017: Project Start

September 2018: Closed out

Closeout Summary: We expect to complete two flights with the camera pods I n February 2019. This will enable JPL to take the initial data and make decisions about how to move forward with this innovation.

Project Website:

https://www.nasa.gov/directorates/spacetech/innovation_fund/index.html#.VC

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

Center Innovation Fund: AFRC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

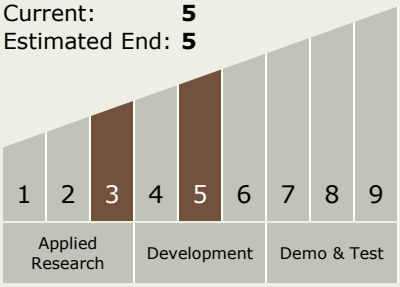
David F Voracek

Principal Investigators:

Matthew L Versteeg
John Baca

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.5 Autonomous Rendezvous and Docking
    - TX04.5.1 Relative Navigation Sensors

Target Destinations

Earth, The Moon, Mars